Agricultural extension advice for producers in the *Hunter*

Winter 2020

Welcome to the winter edition of the Agricultural Extension newsletter from the team at Hunter Local Land Services. While we enjoyed some late autumn rainfall, seasonal conditions are still variable across the region as we continue to recover from the record drought. In this edition we look at how to plan for your winter feed gap, what's happening with our pasture demonstration sites and some exciting new projects about to commence in our region that will help local producers better manage their soil health.

If you haven't already registered, why not sign up for our Hunter Livestock Forum being held in late June. Due to COVID-19 we had to move our forum online, so you can login from home and take part in our webinar series, where you will hear from a range of nationally recognised livestock industry experts on the industry's future and how your decision making now can benefit your productivity in the long run.

The Agricultural Extension Team supports sustainable productive agriculture by providing extension and advisory services primarily to the beef, dairy, sheep and poultry industries. Our aim is to build farmers' capacity to improve business performance and resilience through pasture, livestock, water, soil, nutrients and climate variability management. We partner with producers, producer groups, non-government organisations, government agencies and industry. The roles in the team provide similar extension and advisory services in their areas of skill, knowledge and focus industries. For the full list of team members, please see back page and don't hesitate to contact us for advice.

Hunter LLS Agricultural Extension Advice Newsletter is a quarterly publication providing information on seasonal topics for property and livestock management. Please subscribe to our email list here

https://www.lls.nsw.gov.au/regions/hunter/newsletters

NSW GOVERNMENT

Local Land Services

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We help secure the future of agriculture and the environment for NSW communities

KNOWING YOUR FEED GAP

making feed management decisions over winter

Each year across the region, there is a period of time when pasture quality does not meet livestock energy requirements. The length of this period depends predominantly on seasonal conditions and stocking rates. Did you know that this period of time is known as your feed gap and it can happen multiple times throughout the year?

For most, late winter to early spring is when the feed gap is most likely as the days are cooler and sunlight day length shorter resulting in slower pasture growth. Unfortunately, it is during the coldest part of winter that livestock energy requirements increase as they adjust to conditions. Livestock quickly lose condition when energy requirements are not met, particularly in young or lactating stock.

Understanding your feed gap can help to predict when one may occur and therefore assist you to maintain maximum productivity. If the drought has taught us anything, it has taught us the value of decision making. Early decisions whether right or wrongly made, are still a decision made. Decisions need to be adaptable and flexible as we rely on a variable industry and climate. The ability to predict when a feed gap may occur gives you the opportunity to forward plan and make on farm management decisions early, be that reducing stock numbers or purchasing & storing supplementary feed.

To effectively fill a feed gap there are some things to consider;

- Due to the drought, supplementary feeding costs are high and demand for feed has eased but supply is still low. Feed budgeting is an essential tool to assist you in making timely livestock feed management decisions. Calculate your feed requirement for a reasonable period and be certain that you have enough access to feed to get you through this period. Be vigilant on the changing energy requirements of the livestock that you are feeding. Set yourself critical dates to reassess how things are tracking so that you don't find yourself caught short for feed.
- March to early June is generally the window for sowing winter crops and pasture such as oats, wheat, rye grass or brassicas, while soil temperatures are still warm enough for seeds to germinate.
- Livestock markets remain strong, with rainfall increasing demand of all classes of stock. Taking advantage of these markets in the form of reducing stock numbers, early weaning and short term trading and fattening of livestock may be an option.

Historically supplementary feeding has been the most effective means of filling feed gaps. Many will supplement with silage or hay and grain or pellets (depending on what is available) to provide energy and protein to meet the energy requirements of livestock they have on their property. Recent rainfall has given some the opportunity to make silage and hay to store, whilst grain remains expensive and access is limited. The quality of grain is stable but worth noting that some grain varieties are registering lower protein levels. On a price comparison, manufactured grain based pellets remain a competitive feeding alternative to straight grain, particularly for those not used to intensive feeding. Keep in mind that feed manufacturers are finding it difficult to source protein bases and need to change products. Always introduce a new feed slowly and shandy feeds between batches even when it is the same product.

During the drought many landholders used the Drought and Supplementary feed calculator app. This app also accounts for home grown pasture and is a great tool for making your supplementary feeding decisions at this time. For more information visit: **https://www.dpi.nsw.gov.au/animals-and-livestock/nutrition/feeding-practices/drought-and-supplementary-feed-calculator**

Improved winter pastures are a cost effective strategy if seasonal conditions remain favourable and grazing management is a priority. You need at least 4 to 5 grazing rotations of these pastures to bring down the price per kilogram of dry matter produced. Regular top dressing of these paddocks is needed to achieve this outcome. Winter pasture produced this way can be cost effective at 8 to 12 cents per kg dry matter or 80 to 120 per tonne of dry matter. When crunching the numbers, compare this to the price of baling your own hay & silage or purchasing supplementary feed.

Animals need approximately 8 to 9 kg dry matter of good quality feed to produce 1 kg of beef. So if your paddock feed costs are 12 cents per kg/DM for a cost of $1.08 a kg of weight gain. Or in the case of silage of 12/kg/DM cents for wrapping and 12/kg/DM cents to produce the pasture, this will double your cost of production from the same pasture to $2.16 per kg of weight gain. But of course, silage is a lot cheaper than the current prices for brought in supplements of 45 cents per kg /DM or more and your cost of production is $4.05 cents per kg of weight gain.

Poor quality silage or inadequate pasture-grain mixes with low energy may lead to decreased or no weight gain and result in little return. You would have to use other income from the business to subsidise these feeds. Assessing the quality of your feeding program and percentage of feed mix costs is a worthwhile exercise. Hunter Local Land Services continues to provide free basic feed testing and encourages you to take this opportunity to find out exactly what you are working with. A simple feed test early can save you from a lot more work down the track.

Dry feed in steeper or forested paddocks where animals don't generally venture can be another resource to utilise over winter for grown animals. Spending money on adding a water point and loose licks, molasses mixes etc. to these areas can add to you saving money over a winter period over purchased feeds.

Younger livestock for fattening or replacements have high energy requirements to maintain growth and productivity, the same can be said for pregnant and lactating livestock. These animals need a consistent diet and the best feed available on a daily basis. Skimping on these animals will cost you in the long run. When buying in supplementary feed or preparing feed on farm for storage, consider the quality of feed you require to meet the energy requirements of the class of stock you will need to feed over the feed gap. Making silage from overgrown summer feed will not have the quality for these animals, best off left in the paddock for older animals to consume or mulched to improve quality.

Proactive assessment of seasonal conditions and on farm productivity is imperative as we continue to recover and rebuild. The ongoing drought and Covid-19 have potentially changed some farmers thinking around how best to approach it this year. Livestock markets remain strong, with the improved seasonal outlook increasing demand of all classes of livestock, in particular weaner heifer/steers & grown heifers and re-stocker ewes. In the cattle market at present, high weaner and re-stocker prices of 400-500c/kg are being seen right across the board. This price is giving farmers another alternative to managing their feed gap.

Chicory can provide high quality forage and fill feed gaps in early autumn and late spring

Many are taking advantage of high prices and reducing weaner stock numbers early to ease supplementary feeding costs with less livestock to feed. It is also a good time to reassess the livestock that you worked hard to carry through the drought; condition scoring, mouthing and checking overall health (such as eyes) are some of the simple things you can do to determine if each animal is meeting your production requirements. If they are not, now is a good time to sell on, keep animal welfare in mind and do not let the animal slip in condition as it may end up costing you double to bring it back. Always ensure livestock are fit for the journey when selling. To understand your obligations and what is fit to load get your copy of the MLA Fit to Load Guide; **https://www.mla.com.au/fittoload**

Hunter Local Land Services will continue to provide advice services to landholders during this time, it is advised that you ring first to discuss your needs.

Hunter LLS and North Coast LLS agricultural teams put together a feed availability and costing report monthly that is available to livestock owners. These reports give a general idea of current feed availability and pricing that will assist in making on farm decisions.

For further details and to discuss your individual livestock needs, please get in touch with Hunter LLS;

Land Services Officer – Livestock,
Teresa Hogan on **0417352694** or
email teresa.hogan@lls.nsw.gov.au

Senior Lands Services officer - Landholder Extension
Manning Great Lakes,
Albert Mullen on **0427 496 549** or
email albert.mullen@lls.nsw.gov.au

Remember, you and your family are your farms number one asset, make your decisions early, look after yourself and seek help if required. Contact your local **Rural Assistance Authority** on **1800 678 593** or visit their website
https://www.raa.nsw.gov.au/ for assistance.

LIVE SOIL MOISTURE DATA IS NOW AVAILABLE ON THE HUNTER SOIL MOISTURE NETWORK

The soil moisture network is a great way to track soil moisture in your area to assist with management decisions regarding ground cover, fertiliser application, grazing management and livestock production. Visit the Hunter Soil Moisture Network website and click on a location near you to see how it works - **https://www.lls.nsw.gov.au/regions/hunter/projects-and-programs/Soil-moisture-network-project**

New features now available include:

- Moisture percentages in depths of the profile
- Moisture Comparison Gauge which compares current moisture levels to a month ago and 1 year ago
- Moisture Graph of Soil Moisture Levels over 12 month

Figure 2. Weather Station equipment deployed for data collection.

For example, let's look at Figure 1 that represents the Merriwa (Alcherinca) site. It tells a really good story about the relationship between rainfall received, soil temperature, pasture type and pasture grow rates.

This site to date has received 373mm since 1 Jan 2020, with 16 rain day totals being over 10mm. The pasture type at this site is lucerne, plantain and medics. These pastures are highly productive and have produced an enormous amount of dry matter from the rainfall received.

As you can see from the rainfall that was received in February to March, this moisture was used very quickly. This was due to the pastures rapid growth in relation to available soil moisture and soil temperature driving pasture production. During those months the soil temperature was ideal for lucerne production and the atmospheric conditions allowed for good dry matter production of these pastures.

At the start of April 2020, the 40cm of soil moisture profile was below 10% moisture as a reflection of rapid pasture production. At this time a visual assessment of the pastures show a huge amount of dry matter available but the soil moisture probes were indicating that the plant available moisture to drive further production was limited. When soil moisture gets low, the plants no longer use energy to drive dry matter production of vegetative growth, instead they use the energy reserves to drive root growth in search for more moisture.

This was also apparent at many other probe sites in the soil moisture network - summer rains and soil temperatures had driven rapid summer pasture growth giving a false sense of security. The rapid pasture growth of summer annual grasses used all the available soil moisture. Fast pasture growth means more moisture and nutrients needed, especially in summer. This potentially left the soil moisture profile in short supply to generate autumn and winter pasture growth without further rainfall events.

Since April this site has received further rainfall which has improved plant available moisture through the profile. Even though the rainfall received since April has been less than February/March totals, soil moisture isn't being used as quickly because of evapotranspiration and the slowing down of the plants growth rate.

Monitoring soil moisture gives great perspective on what has happened but also what may happen. In general if soil moisture falls below 12 O'clock on the moisture comparison gauge, then pasture growth will be slowing down. To the right of 12 O'clock pasture growth will not be limited by moisture. However in the case of this day (shown in Figure 1), a layer of dry soil at 40 cm can provide a restriction on new root growth. The important thing is these probes allow us to see what is happening in real time and make decisions more confidently.

Currently soil probes are located in the upper Hunter but Local Land Services has more probes to be installed in the next few months in the lower Hunter and Manning along the coastal belt.

For more information on the Hunter Soil Moisture Network please contact
Sarah Giblin, Senior Lands Services officer - Sustainable Agriculture on **0409 785 172** or email sarah.giblin@lls.nsw.gov.au

Australian Government | National Landcare Program

This project is supported by Hunter Local Land Services through funding from the Australian Government's National Landcare Program.

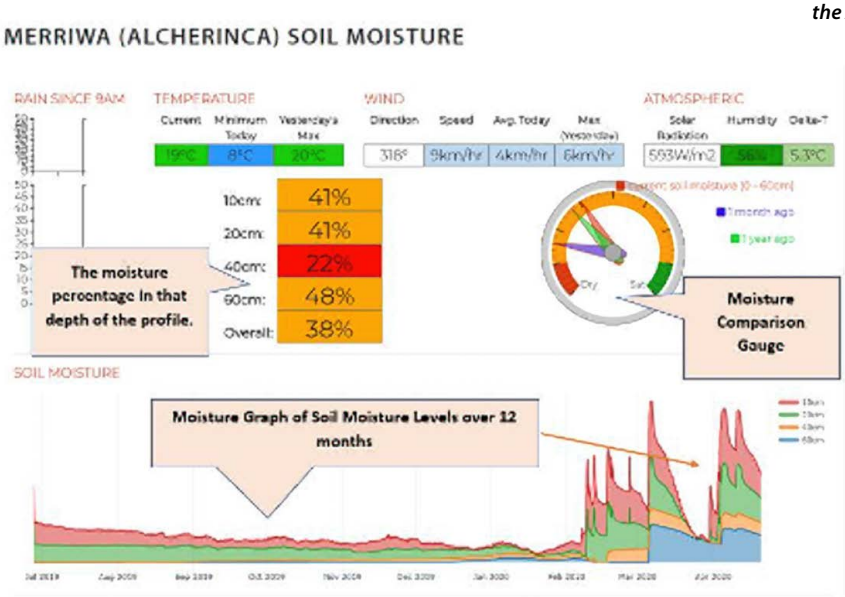

Figure 1. Merriwa (Alcherinca) Soil Moisture data as displayed on the Hunter Soil Moisture Network website.

GENETIC GAIN - a Key to Increasing Yield, Profits and Resilience

It can take up to 15 years to breed, evaluate, test and bring a new variety of pasture seed to farmers. This is an expensive process and while short term gains in improvements can seem small, research shows 0.7-1% per year increase in dry matter production. Over time these are significant advances and they also provide improved tolerance of stress within the genetic gain and by improving associated endophytes. That provides greater resilience in tough conditions and a wider adaptation.

To demonstrate these gains in perennial ryegrasses PGG Wrightson Seeds in collaboration with Incitec Pivot and the Victorian DPI conducted two trials. The aim was to:

1. Demonstrate the genetic gains in yield from older varieties of Victorian perennial ryegrass to the latest new varieties
2. Examine the response of new varieties to old with varying nitrogen rates to assess if new varieties are more efficient or whether they just need more fertiliser to grow well

The results of the trials are displayed in Figure 1 and show that investing in improved pasture genetics pays large dividends and improves utilisation of nitrogen. In this trial new varieties like Base AR37 were grown alongside older varieties such as Fitzroy SE and Victorian. Victorian ryegrass dates back to the 1800s.

Genetic Gain

The trial showed that yields from the newer varieties were significantly higher at all nitrogen application rates. This shows an improvement in nitrogen efficiency due to genetic gain. This is why companies like PGG Wrightson Seeds invest in research and development.

Even if you are using a low nitrogen input system, improved genetics shows that you get a benefit for your livestock system. If you choose improved genetics over old genetics, it would be like using old genetics with nitrogen to get a similar yield.

Nitrogen response

We can assess Nitrogen Use Efficiency (NUE) of the nitrogen response as the ratio of the response of dry matter produced/ Ha to 1kg/N/Ha applied. So a ratio of 10:1 is 10kg/dm/ha is grown for every 1kg/N/Ha applied as fertiliser. With a ratio of 10:1, if you applied 30kg/N/Ha you could grow an extra 300Kg of DM/Ha.

As shown in Figure 1, improved varieties had a winter increase of nitrogen efficiency from 11.1 to 15.1. That's roughly 50% more forage grown at the same fertiliser rate. This shows the importance of variety choice. This also has benefits to environmental losses and the production or output on farm per unit of input.

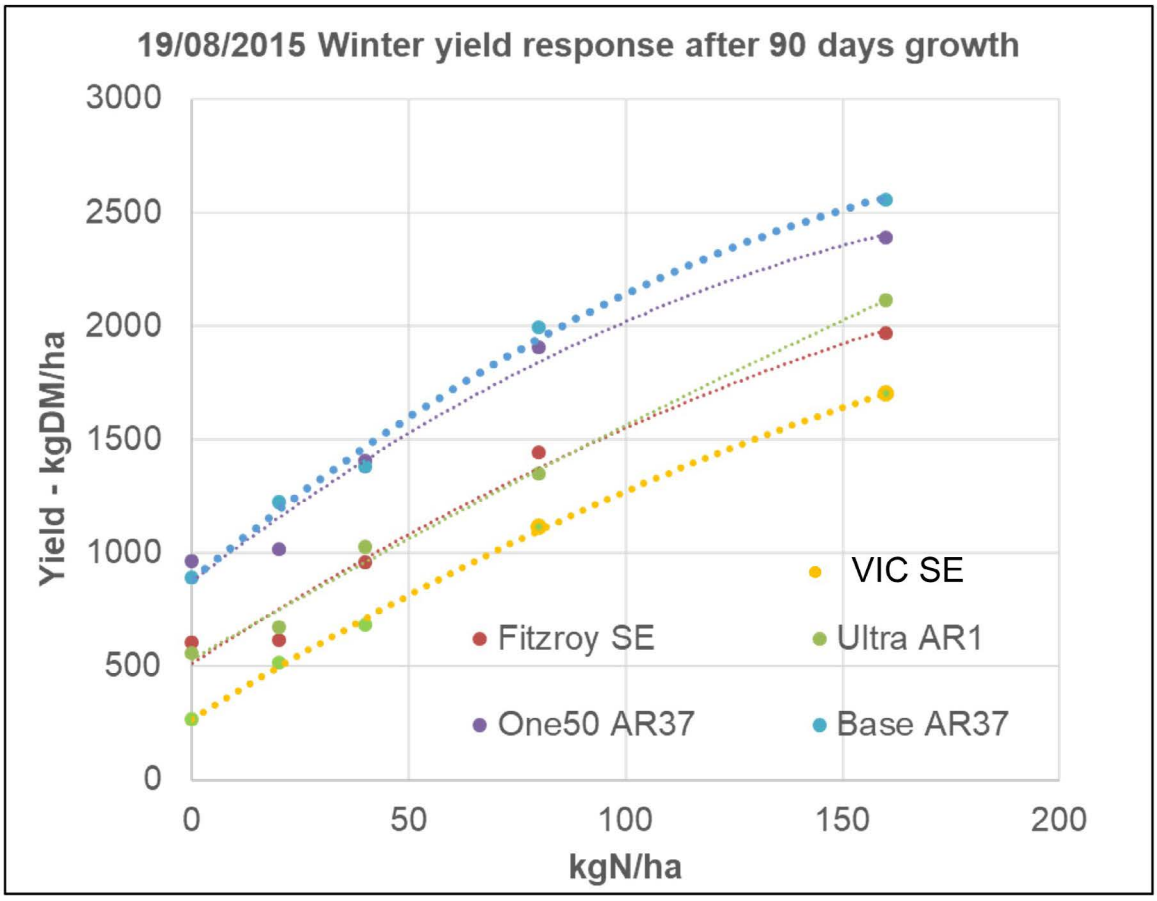

Figure 1. Winter yield response on 9/08/205, after 90 days growth newer lines produce higher yields at all rates of nitrogen demonstrating higher Nitrogen Use Efficiency of new genetics

Why research and development is important

It is important to note it takes long term research and development to deliver pasture products to the farming community. It can take up to 15 years to breed, evaluate, test and bring a new variety of pasture seed to farmers. PGG Wrightson Seeds spend $9 M/pa on research and development to improve genetics and farming systems. Over the years research shows improvements have been made in quality, dry matter production and stress tolerance for all species including annual ryegrasses.

In addition to their own work they have their products tested against competitors through independent testing of the Pasture Trial Network. This provides credible pasture trial information and results. This is a fantastic collaboration of pasture seed companies, Meat and livestock Australia (MLA), Dairy Australia and the Australian Seed Federation.

So how do I know more?

Beef Pasture: MLA Pasture Trial Network

The MLA, Pasture Trial Network tool allows you to assess and compare the performance of more than 100 pasture varieties across the key pasture species for the red meat industry, including phalaris, cocksfoot, tall fescue, perennial and annual ryegrass, sub-clover and Lucerne. The Pasture Trial Network tool can be accessed here on the MLA website -

https://www.mla.com.au/extension-training-and-tools/tools-calculators/pasture-trial-network/

Dairy Pasture: Use the Forage Value Index

The Forage Value Index (FVI) rating system helps Australian dairy producers and their advisors make more informed decisions when selecting perennial ryegrass cultivars. It provides an accurate, reliable and independent assessment of the potential economic value of perennial ryegrass cultivars in different dairy regions of south-east Australia. Selection of better performing cultivars helps to increase pasture productivity at key times of the year and ultimately, farm profitability.

https://www.dairyaustralia.com.au/farm/feedbase-and-animal-nutrition/pasture/forage-value-index

More information please contact **Josh Hack**, Agronomist with PGG Wrightson Seeds, mobile: **0418213898** or email: jhack@pggwrightsonseeds.com.au

Figure 2. Nitrogen by Variety Response Trials, Leigh Creek, Ballarat

Trial site at Ballarat Victoria where five ryegrass varieties of differing genetic merit were fertilised at five nitrogen rates 0, 20, 40, 80,160 kg N/ha in 2015.

SINGLETON PASTURE DEMONSTRATION SITE - Winter Systems

Figure 1. Visitors to the field day listening to industry representatives discuss different pasture species and inspect the pasture trials on the site.

The Singleton pasture demonstration site winter systems was established in 2018 to give farmers the opportunity to visit a site where industry representatives and companies showcase their new and current pasture species. The irrigated site is designed for intensive pasture systems with the focus on maximising home grown feed. The site is owned and managed by local agronomist Kyle Ropa who works for Farmers Wharehouse and has a wealth of knowledge on the local area and an established network with the involved companies and local farmers.

Some of the seed companies that are on board this year include Pasture Genetics/S&W Seed Company, Barenbrug (formerly Heritage Seeds), PGG Wrightson Seeds, AusWest Seeds, Seed Force and Upper Murray Seeds. Other companies involved are Incitec Pivot Ltd, AgSolutions, Sumitomo, Yara and Corteva Agriscience. Tocal College also have a significant input into the site through Agronomy lecturer Justine Baird.

In 2019 a total of three very successful field days were held on the site attended by more than 300 people, who were able to walk through the more than 150 varieties of pasture that had been established at the site. Representatives from seed companies were on hand to give information to landholders on varieties of pasture species, best practice grazing management and maximising fertiliser profitability. Practical demonstrations of silage making and how to maximise packaging solutions were delivered by Kyle Ropa. Industry representatives gave talks including Local Land Services vet Lyndell Stone who discussed the importance of being vigilant for nitrate poisoning and NSW State Water representative Martin Prendergast discussing water management in the Hunter Region.

Figure 2. Water NSW representative Martin Prendergast discussing water issues in the Hunter Region.

Where to from here

This year brings a host of issues regarding field days and attendance of numbers of people in one location due to COVID-19 restrictions. At this stage there are three field days planned for the site and each will deliver information on different themes. Again, all the industry companies and representatives are keen to showcase their products. The trial site this year will also be collecting data from pasture measurements and quality feed samples from some pasture varieties. We will also be doing plant population and plant emergence trials of six annuals, six biennials and six perennials of new varieties at the site.

Field days wwere proposed for May, late August/early September and November and once confirmed the dates will be added to the events page on the Hunter Local Land Services website **https://www.lls.nsw.gov.au/news-and-events/events.**

In place of the field day to be held in May, a virtual event will be delivered as a series of videos discussing the key themes including interviews with suppliers and guest speakers.

These themes will include-

- Preparation and sowing information including the importance of sowing depth and the use of fertilizers at sowing.
- Sowing rates and the difference of available feed including quickness to first feed options.

The field day to be held in late August/early September will include talks about nutrition, nitrogen management and water allocations. Themes to be covered include:

- Grazing management and animal health.
- Fertilizer management using ProGibb and other types of additives.
- Total dry matter yields and feed quality tests to date.

The field day for November will include information about-

- Hay making and silage day with machinery demonstrations.
- Variety/species differences and heading dates
- Feed quality tests and final dry matter yields to date.

For further information about this project and upcoming field days, please subscribe via this link **https://hunterlls.wufoo.com/forms/singleton-pasture-demonstration-site-updates/**

Or contact **David Deane**, Lands Services officer - Pastures **on 0411 108 961** or email david.deane@lls.nsw.gov.au

We've just launched the first five episodes of our new Podcast 'The Hunter LLS Poddy'!

In the first episode we chat with the General Manager Brett Miners all about the organisation, our team and working with our customers and community! We've also included four great presentations from our recent 'Back to Business' Drought and Bushfire Recovery Workshops at Gloucester, held in partnership with Meat and Livestock Australia.

Our Podcast covers the latest advice, support and services from Hunter Local Land Services. This includes conversations with our customers, partners and other agencies as well as relevant presentations from recent events. We provide support to customers in Animal Health, Biosecurity, agricultural management and production, natural resource management as well as connecting with services and support available to our community.

Download the podcast episodes today at:
https://www.buzzsprout.com/1028284/episodes

HUNTER SMARTER FARMING - Irrigating for Profit

The Hunter Smarter Farming: Irrigating for Profit project aims to improve the capabilities of the Hunter's dairy irrigators to increase profits by optimising dry matter (DM) production and utilisation throughout the irrigation season, concentrating on efforts to start irrigation at the right time and rate to avoid ongoing seasonal soil moisture deficit.

AUTUMN UPDATE:

Indicators demonstrate irrigate now to drive late autumn/early winter production

Adam Forbes and Tom Middlebrook have appreciated the relief and opportunities for drought recovery that recent rainfall delivered, but April has been dry and they now face some important decisions. This is not an uncommon scenario if we look at rainfall in the past 20 years at Taree, the closest long-term data for the Gloucester region, demonstrating April-May rainfall has been consistently low.

Traditionally, both sites would be looking to hibernate their irrigation systems for the season however, learning from the past twelve months, flexibility to drive production when given the opportunity is key - and now is the opportunity!

While there is a risk that irrigating now could be followed by heavy rain and cause a wet winter, there are three compelling factors that point to irrigating now:

1. There is an immediate loss of valuable growth in the autumn winter feed gap with moisture stress in April;
2. Moisture stress early in the growth of cereals can produce lasting setbacks by reducing tiller numbers; and
3. While rain has ceased, there is still flow in the Bowman and Barrington rivers and it's important to access that benefit now.

The soil moisture graph shown in Figure 1 is for the probe installed at Bowman Farm, managed by Tom Middlebrook. The study area is currently sown to a Barley/ Italian Rye/ Brassica mixed pasture. Since establishment on the 28th of February 2020, soil moisture has been on a downward trend as weekly evapotranspiration (ETo) has remained at 18-21mm but limited rainfall has far from replenished plant used or lost moisture.

Doing the simple calculation of rainfall minus ETo, the paddock has been in a moisture deficit over the past four weeks. Now with good flow restored to the Bowman River, Tom has the opportunity to keep his soil moisture in the Readily Available Water (RAW) level, near full point on the graph, to ensure his plants can most easily access water and put energy into growth. With his daily SWAN Systems forecast email notification (Fig 2) telling him that rainfall is unlikely again this coming week, and the Bureau of Meteorology (BOM) predicting only 25-50mm in the month of May (Source: BOM Climate Outlook May to July), the time to act is now!

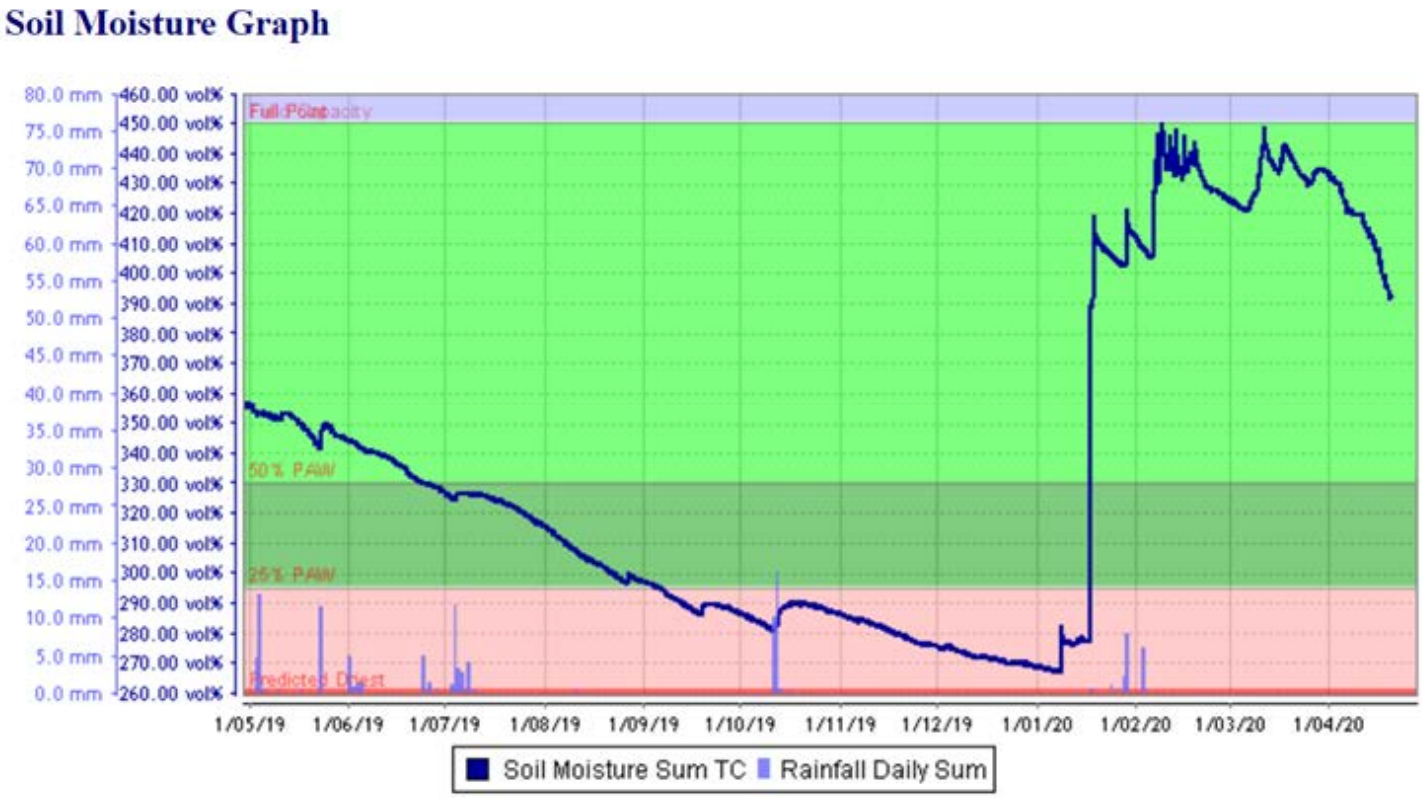

Figure 1. Soil Moisture graph at Bowman Farm on the 20th April 2020. Moisture is falling below optimal levels and will continue on the trend in coming weeks, effecting growth potential.

A similar story is transpiring on the Kywong Flat site of Adam Forbes. Figure 3 shows the logged soil moisture probe levels of the F6 site since the 1 March. Soil moisture remained steady throughout March but now prolonged moisture deficits are having an impact and the trend is downwards. The paddock was sown to Oats on 3 March for direct grazing. Irrigation applied now will only benefit growth rates and drive production. To lift soil moisture back into the RAW (above the blue line), Adam needs to apply at least 30mm* over the coming seven days. As he applies irrigation at off-peak power periods, these applications should be spread across two evenings and the weekend.

*Note: ETo refers to the evapotranspiration of an actively growing, well-watered grass stand 120mm high. It is recommended that Oats are grazed to the height of the lowest stem, about 120-150mm. An ETo higher than that reported in the SWAN Systems notification, therefore, needs to be taken into account.

Key Messages

- April-May is a feed gap period and these early sown crops are ideally positioned to fill that gap provided moisture is available.
- Timely irrigation can be used to maximise the yield and nutritional value of the oats & mixed barley dominant pasture of the two study sites.
- Cereals typically use autumn-winter rainfall more efficiently than annual
ryegrass, producing more DM/mm of water.
- Improving soil moisture provides opportunity to apply Nitrogen (30-40kgN/ha) to actively growing plants which will increase potential for nutritional value to persist into early winter.
- The utilisation of green feed early in autumn has allowed for a longer rotation and therefore allowed for other areas of the farm to be prepared and sown to winter pastures.
- It is important to take advantage of access to water when it is available and growing conditions remain good. Using available water now may increase the number of rotations across both sites and optimise potential to harvest silage.
- The use of freely available forecast data combined with real time objective soil moisture data from in-paddock probes, enables more informed irrigation decision to maximise yield potential of crops and pasture under irrigation.

Date	ETo* mm	Chance of Rain %	Rain Range mm	Rain Estimate mm	Temp Range °C	Avg R. Humidity %	Avg Wind Speed km/hr
Tue, 21-Apr	2.7	10	< 1	0.0	10-26	60	5
Wed, 22-Apr	3.4	5	< 1	0.0	12-27	58	7
Thu, 23-Apr	2.9	< 5	< 1	0.0	9-27	66	5
Fri, 24-Apr	3.1	< 5	< 1	0.0	11-29	63	5
Sat, 25-Apr	3.1	< 5	< 1	0.0	12-29	65	5
Sun, 26-Apr	2.9	< 5	< 1	0.0	11-30	66	5
Mon, 27-Apr	2.6	25	< 1	0.0	12-28	70	5
TOTAL	20.7			0.0			

Figure 2. SWAN Systems Gloucester forecast notification for the 21st April 2020. All indicators show soil moisture will continue on its current downward trend.

Source: Forecast provided by the Bureau of Meteorology, © Commonwealth of Australia. Sponsored by SWAN Systems

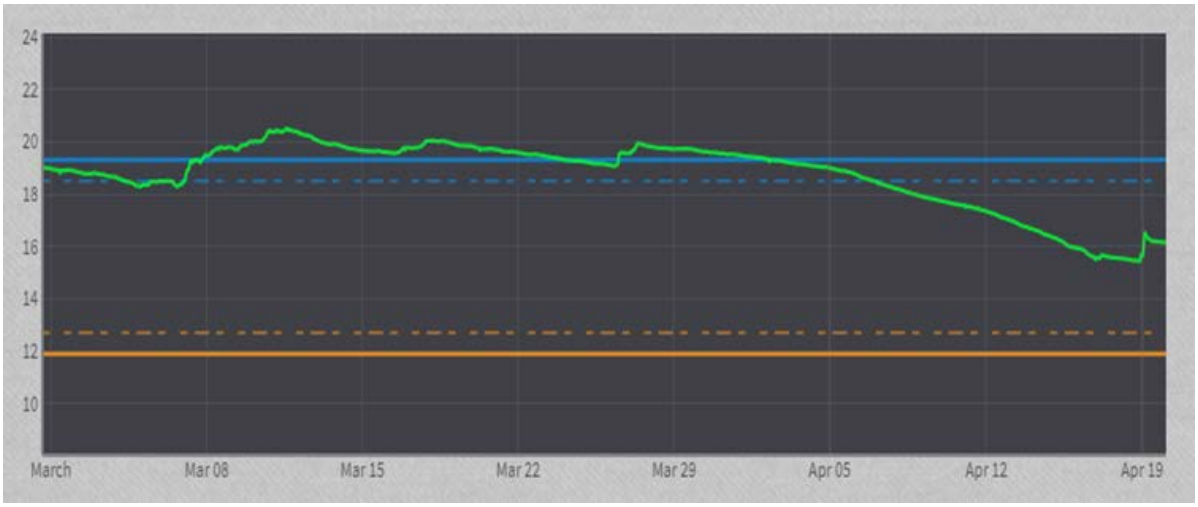

Figure 3. Soil Moisture graph of paddock F3 at Kywong Flat on the 20th April 2020. Moisture levels are falling below optimal and are likely effecting maximum growth potential.

SOILKEE TRIAL – Soil Regeneration towards Resilient Farming Systems

Hunter Local Land Services is partnering with local producers to conduct a trial of the Soilkee Renovator and multi-species sowing method over the next two years with funding from the National Landcare Program Smart Farms.

The Soilkee Renovator was developed by Niels Olsen in Gippsland, VIC. and was successful to become the first project in the world to receive carbon credits for soil carbon under the Emissions Reduction Fund and the Paris Agreement.

Mr Olsen says Soilkee combines cultivation, mulching, aeration and mixed species seeding to improve grazing systems and build soil carbon in one pass.

Mr Olsen said "This approach is a world first and Soilkee was the first farm to be issued with carbon credits for a soil carbon project under the Emissions Reduction Fund and the Paris Agreement. March 14, 2019 is marked as an historic day in the soil carbon agricultural space with the first credits to contribute towards Australia's national target under the Paris Agreement and the first eligible soil carbon credits worldwide."

A study conducted by Dr. Maarten Stapper between April 2013 and May 2014 on three Gippsland farms showed that the Soilkee treatments increased dry matter production by 46%, crude protein content by 45% and soil organic carbon by 23%. View the full report here https://soilkee.com.au/gallery/the_soilkee_renovator-8p.pdf

Final soil tests showed that nutrients from the total extractable pool were made significantly more plant available. For example, improvements of 34, 51 and 122% in plant available Phosphorus, Sulphur and Nitrogen, respectively, were obtained on average for the Soilkee treatments. Dr Stapper claims the abundance and diversity of microbes greatly improves nutrient availability.

Dr. Stapper said "These increases were found in the first 13 months of treatment and infiltration and we wonder if they could have been due to a number of factors including response to cultivation, better establishment, possible deeper mixing of organic matter or Phosphorus, and possibly better rainfall. Our trials aim to look at these factors in the local conditions."

Our local trials will be conducted on four farms with members of the Dungog-Gresford Land and Beef Group, Hunter Dairy Development Group and Tocal Agricultural College. The objectives of the project are to apply the Soilkee pasture renovation approach by:

- planting over two consecutive years a multi-species annual pasture mix for winter feed in one dryland and one irrigated site on alluvial soils
- planting a multi-species perennial pasture mix in two dryland sites on the poorer soil types on low slopes with degraded pastures.

Producers can follow the progress of these Soilkee trials at field days to be held for both sowing and harvest events, together with a suite of resources that will become available including videos and case studies. We will also investigate the feasibility and economics of generating credits from soil carbon sequestration.

The trials are due to commence in May, but this may change as we continue to adhere to the COVID-19 regulations to maintain the safety of our staff and customers. For more information contact: **Col Freeman**, Senior Lands Services officer - Sustainable Agriculture on **0428 043 427** or col.freeman@lls.nsw.gov.au.

Australian Government | National Landcare Program

This project is supported by Hunter Local Land Services through funding from the Australian Government's National Landcare Program.

Photo credit: With permission from Dr Maarten Stapper

Photo 1. The Soilkee Renovator operation

Photo credit: With permission from Dr Maarten Stapper

Photo 2. Growing plants from seeds dropped onto the 'kee's of Soilkee Renovator

The Soilkee Renovator (From https://soilkee.com.au/)

ADAPTING TO A CHANGING CLIMATE - growing subtropical pastures in Merriwa

The Merriwa Pasture Demonstration site was established in 2015 through a landholder partnership. The site is located 10km north-east of Merriwa on the Scone Rd. The soil type is brown and red basalt which is characteristic of the Merriwa Plateau.

The purpose of this site is to provide a demonstration area for landholders and agricultural advisors to see how pasture species and varieties perform in the Merriwa Agricultural environment. This information provides landholders with practical and relevant knowledge of pastures that are suited to the Merriwa farming systems and to adapt and provide flexibility to the changing and variable climatic conditions.

The pasture types that have been sown at this site include subtropical grasses, temperate legumes and subtropical legumes, see Figure 1. This site also hosts the soil moisture probes and weather station which feeds data into the Hunter Soil Moisture Network and can be accessed at the website www.lls.nsw.gov.au/regions/hunter/projects-and-programs/Soil-moisture-network-project. The moisture probe provides information on rainfall, water infiltration and soil temperature. This data is used to assess the performance and how productive these pastures are at converting rainfall into dry matter.

Subtropical Pastures – Lessons Learnt

In 2016 several subtropical pastures were sown at the site to demonstrate how these pastures perform on heavy soils. Subtropical varieties that have proven to be suited to the heavy soil of the Merriwa District are those from the Panicum family such as Bambatsi Panic and Gatton Panic including Purple Pigeon Grass and Floren Bluegrass.

Weed Control - It is critical that a summer annual grass weed management plan is implemented at least two years before sowing of a subtropical legume. Subtropical seedlings are not competitive compared to summer annual grass seedlings such as summer grasses therefore we need to prepare weed control two years in advance of sowing.

Ground Cover - Ground cover is essential when sowing subtropical grasses on heavy soil. As the seed can only be sown shallow (2cm) on heavy soils the seed bed dries out quickly and therefore soil moisture is insufficient around the seed for germination. The seed bed needs to be moist for up to five days to ensure seed germination while the ground cover acts as insultation to protect the seed from fluctuating soil temperatures and evaporation.

Grazing Management – Once the grasses have been successfully established, grazing management is critical to ensure sustainable production. Subtropical grasses can produce a lot of dry matter very quickly following a rainfall event. This quick growth means that pasture quality changes rapidly which will have an impact of animal production. The best way to manage this growth is by making your paddocks smaller or stocking the paddock with high numbers of stock for a short period of time.

The successful establishment of subtropical grasses in farming systems has proven to be essential when adapting to the variable climatic conditions. They have proven how well they can turn rainfall from summer storms into feed quickly and provide essential ground cover. These subtropical grasses have been the key to continued productive farming systems during the recent dry seasonal conditions.

Temperate Legumes - The Merriwa Demonstration Site now has twelve established temperate legumes. These legumes include sub clovers, medics and vetch. These were sown in 2016 to see how these legumes perform in the Merriwa climatic conditions. Temperate legumes have been sown into the Merriwa farming systems for a number of years. The purpose of this demonstration was to see how the new and improved temperate legumes perform alongside each other and also to see which legume would be best suited in a subtropical grass pasture composition and temperate or native grass pasture composition.

Subtropical Legumes -The newest edition to the Merriwa Demonstration site is the sowing and establishment of subtropical legumes. These were first sown in 2019 and due to the exceptionally dry seasonal conditions, establishment was poor.

One of the subtropical legume varieties did survive and has shown how extremely drought tolerant it is. This legume was Desmanthus - a drought hardy and non-bloating perennial legume (see Figure 2). Desmanthus has shown a lot of potential to add value to the Merriwa Pasture systems. This legume would be best suited in a temperate grass pasture such a Phalaris or in a native pasture system. The legume would be actively utilising summer rainfall by producing high value feed to paddocks that would normally lay dormant during the summer months whilst adding nitrogen that will be available to the winter grass system.

Hunter Livestock Forum 2020

Decision Making in the Livestock Industry

Register now for webinar sessions starting Friday 26th June

Agriculture is changing, challenging and complex so being confident to make the right decisions at the right time is important. The Hunter Livestock Forum 2020 will explore on-farm decision making considering the people, land and business elements. It will provide Hunter Livestock producers the strategies and tools for improved decision making - being able to make the right decisions is critical. It doesn't matter what we grow or how we grow it we still need to make decisions for a sustainable enterprise and industry.

Due to COVID-19 restrictions the Forum will be delivered in a series of live webinars held fortnightly on Friday mornings, starting on 26th June. Register here on the Hunter LLS website **https://www.lls.nsw.gov.au/news-and-events/events/h-events/2020-hunter-livestock-forum**

It's simple to get involved and we encourage everyone to take part in this exciting new way of delivering an interactive event. In the week of each webinar, you will receive an email with instructions on how to join. At the start time on the morning, simply click on the link in the email and you will automatically join the webinar. You can use any device you prefer - your smart phone, tablet or computer.

Tony Hegarty, Cattle Council of Australia President, Chair Hunter LLS and Hunter livestock producer will start the first session on Friday 26th June. Tony will talk on the decision-making process he and his wife Jane use on their farm at Cassilis and how they use the good seasons to prepare for the bad.

Tony will be followed by Cam Nicholson from Nicon Rural Services. Cam will discuss 'The Science of Decision Making – the heart, head and gut of decision making' and will demonstrate the Decision Matrix Tool to use for on-farm decision making in any scenario. Cam recognises that decision making is a skill that can be learnt but that most of us are never taught. So come and learn how to make decisions.

We make hundreds of decisions each day. Sometimes, we have to make tough decisions under pressure, and the decision itself can cause stress. At the next session on Friday 10th July, Matthew Milne, Coordinator at the Rural Mental Health Advisory Program (RAHMP) will provide tips to minimise the decision-making stress and help us in the decision-making process.

Graham Creed, ABC weatherman, will give a Climate Outlook Update and explain how to use and interpret weather forecasts and the latest weather-related tools for decision making that are available to you. Graham will also provide Climate Outlook Updates on the 26th June and 7th August.

Each webinar will include a Q&A session with the presenters. There will also be an opportunity for you to let us know what other topics you would like to know more about. You can also tell us what topics you are interested in when registering for the webinar.

For more information please contact Hunter Local Land Services on 1300 795 299.

FUNDING FOR FENCING – Supporting our neighbours, public land boundary fencing program

The NSW Government has committed $209 million to help bushfire-affected landholders with the cost of rebuilding boundary fences adjoining public lands. Private landholders who share a boundary with public land and were impacted by the Northern and Southern fires of late 2019 and early 2020 are eligible to receive up to $5,000 per kilometre to contribute to the replacement of damaged boundary fences.

Note that for the purposes of this grant, public lands include National Parks, Forestry Corporation land, Traveling Stock Reserves, Crown reserves, tenured roads and leases, roads managed by Roads and Maritime Services or Local Government.

Grants can be issued retrospectively to cover costs already incurred by landholders replacing fire damaged fencing where a boundary is shared with public lands.

How can you apply?

We have dedicated Boundary Fence Coordinators ready to work with private landholders to identify their needs and ensure the funds flow as soon as possible. To apply for the grant simply complete the form at the link below or call the team on 1300 778 080.

Apply here -

https://www.lls.nsw.gov.au/what-we-do/our-major-projects/supporting-our-neighbours-public-land-boundary-fencing-program

For more information, Please see the guidelines here

https://www.lls.nsw.gov.au/__data/assets/pdf_file/0015/1210146/NSW-Government-Guidelines-Supporting-our-neighbours.pdf

Frequently Asked Questions -

https://www.lls.nsw.gov.au/__data/assets/pdf_file/0014/1210145/NSW-Government-External-FAQs.pdf

DROUGHT RECOVERY INFORMATION

Visit our Hunter LLS Youtube channel for presentations from recent events as well as project updates and advice from our team. Here are the links to presentations from our recent Drought Recovery Information session at Gloucester.

Neil Moss Drought Nutrition Part 1 – Nutrition & Energetics Basics 1
https://youtu.be/DZCB0ZA6Eio

Neil Moss Drought Nutrition Part 2 – Energetics & Feed Required 1
https://youtu.be/BlfJKvV7rrA

Neil Moss Drought Nutrition Part 4 – Feeding Gone Wrong
https://youtu.be/nGEQ6Po8W6M

Neil Moss Drought Nutrition Part 5 – Minimising Waste
https://youtu.be/bTDzaePhH9E

Drought Recovery Options Part 1 – Pasture Strategy & Portfolio Approach
https://youtu.be/ZH6znwUaX1s

Drought Recovery Options Part 2 – Response to Rain, Options & Opportunities
https://youtu.be/2lSWQ8P2rRw

Neil Moss Drought Recovery Options Part 4 – Grasses + Planning & Preparation
https://www.youtube.com/watch?v=YNeKE-2zdw8

Nikki Henderson on Heifer Management & Rebuilding Your Herd
https://youtu.be/zzYDxaDCGEQ

Pasture Discussion – Peter Beale, Josh Hack & Neil Moss
https://youtu.be/3w9OX1CA9Eo

Drought Recovery Options Part 2 – Response to Rain Options & Opportunities
https://youtu.be/2lSWQ8P2rRw

For more information about Hunter Local Land Services:

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www.lls.nsw.gov.au/regions/hunter

www.facebook.com/HunterLLS/

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For information on these events and more, and to RSVP please visit www.lls.nsw.gov.au/regions/hunter/events

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